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UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No. 42390.P4114 Total Pages 2

First Named Inventor or Application Identifier Vaughn S. Iverson

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ADDRESS TO: **Assistant Commissioner for Patents**
Box Patent Application
Washington, D. C. 20231

APPLICATION ELEMENTS

See MPEP chapter 600 concerning utility patent application contents.

1. X Fee Transmittal Form
   (Submit an original, and a duplicate for fee processing)
2. X Specification (Total Pages 31) (including title page)
   (preferred arrangement set forth below)
   - Descriptive Title of the Invention
   - Cross References to Related Applications
   - Statement Regarding Fed sponsored R & D
   - Reference to Microfiche Appendix
   - Background of the Invention
   - Brief Summary of the Invention
   - Brief Description of the Drawings (if filed)
   - Detailed Description
   - Claims
   - Abstract of the Disclosure
3. X Drawings(s) (35 USC 113) (Total Sheets 7)
4. X Oath or Declaration (Total Pages 3)
   a. X Newly Executed (Original or Copy)
   b. ___ Copy from a Prior Application (37 CFR 1.63(d))
   (for Continuation/Divisional with Box 17 completed) **(Note Box 5 below)**
   i. ___ DELETIONS OF INVENTOR(S) Signed statement attached deleting inventor(s) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b).
5. ___ Incorporation By Reference (useable if Box 4b is checked)
   The entire disclosure of the prior application, from which a copy of the oath or declaration is supplied under Box 4b, is considered as being part of the disclosure of the accompanying application and is hereby incorporated by reference therein.
6. ___ Microfiche Computer Program (Appendix)
7. ___ Nucleotide and/or Amino Acid Sequence Submission
   (if applicable, all necessary)
   a. ___ Computer Readable Copy
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ACCOMPANYING APPLICATION PARTS

8. X Assignment Papers (cover sheet & documents(s)) (3 Pages—Signed)
9. ____ a. 37 CFR 3.73(b) Statement (where there is an assignee)
   X b. Power of Attorney
10. ____ English Translation Document (if applicable)
11. ____ a. Information Disclosure Statement (IDS)/PTO-1449
    ____ b. Copies of IDS Citations
12. ____ Preliminary Amendment
13. X Return Receipt Postcard (MPEP 503) (Should be specifically itemized)
14. ____ a. Small Entity Statement(s)
    b. Statement filed in prior application, Status still proper and desired
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APPLICATION FOR UNITED STATES LETTERS PATENT

FOR

METHOD AND APPARATUS FOR PROVIDING A LOCATION BASED APPLIANCE PERSONALITY

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METHOD AND APPARATUS FOR PROVIDING A LOCATION BASED APPLIANCE PERSONALITY

BACKGROUND OF THE INVENTION

1. Field of the Invention

The present invention relates to the field of electronic devices and, in particular, to a method and apparatus for enabling electronic devices to modify their user interface, application set and, therefore, their perceived functionality based, at least in part, on the location of the electronic device.

2. Background Information

The evolution of electronic devices continues at an ever increasing rate. Indeed, electronic devices have infiltrated many areas of every day life to the point where they are commonly thought of as household or office "appliances" as we become ever more deeply entrenched in the electronic age. Examples of this evolution abound as electronic organizers have all but replaced paper-based calendars and organizers; pagers and cellular phones have released us from the bond of wireline telephone systems; substantially instantaneous communication via electronic mail has supplanted its slower postal service counterpart; and the global communications network colloquially referred to as the Internet has opened the libraries of the world to anyone with a computer (in any of its many forms) and a modem.

In the continuing effort to improve the usability of such electronic appliances which they produce, manufacturers have focused on the form factor, e.g., size, of the appliance. That is, the

effort expended by manufacturers of electronic appliances has been to reduce the size of the electronic appliance, its power consumption, and the heat generated by the appliance to make it more portable for today's highly mobile users. The size of, for example, notebook computers, personal digital assistants (PDA's), personal communication systems (PCS) handsets, pagers and personal navigation systems (e.g., utilizing satellite-based global positioning system (GPS) technology) have all been reduced to make them easier to fit into a briefcase, a backpack or a shirt pocket.

Although the reduced size of these appliances has, indeed, made them more appealing to the masses, many consumers have realized that these smaller devices are merely a reflection of their larger ancestors. That is, the smaller electronic appliances provide the same information and application set using the same user interface as their larger counterpart. For example, the user of a computer system will typically utilize the same operating system rendering the same user interface irregardless of whether the computer is being used in the home or office.

Those skilled in the art have begun to realize that users of electronic appliances often have different electronic appliance needs depending upon where it is being used. For example, someone using the appliance at work will need ready access to work files, phone directories and the like, whereas a home user of the device may need ready access to home finances, games and educational applications, personal phone directories and the like. A salesman, using the appliance on a business trip may well have a different and unique set of needs altogether, requiring the device to be utilized as a pager, facsimile machine or any of a host of other applications. Although the users of such devices in these alternate locations may, in fact, have

quite different interests and, consequently, entirely different sets of needs, the developers of such systems have heretofore disregarded this need, relegating such users to buy a plethora of dedicated electronic appliances to satisfy these individual needs.

Some devices have been developed which provide unique information to a system user on the basis of time and/or date. Personal Digital Assistant's (PDA's) such as the Palm Pilot™, by 3COM, Corporation of Santa Clara, California, offers a time planner application which will alert a user when it is time for a pre-scheduled event, manually programmed by the system user. Analogously, Global Positioning Systems (GPS) navigation systems provide location based information to a user. However, each of the foregoing are dedicated appliances, incapable of automatically adjusting their user interface and perceived functionality, i.e., their personality based on location or user.

Thus a need exists for a method and apparatus for providing a location based appliance personality, unencumbered by the deficiencies and limitations commonly associated with the prior art.

SUMMARY OF THE INVENTION

In accordance with the teachings of the present invention, a method and apparatus for providing a user interface and information control is described. In accordance with one embodiment of the present invention, a method for providing an appliance personality is presented comprising ascertaining a current location/location type for the electronic appliance, selecting a suitable electronic appliance personality based, at least in part, on the ascertained location/location type of the electronic appliance and provisioning the selected appliance personality on the electronic appliance.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention will be described by way of exemplary embodiments, but not limitations, illustrated in the accompanying drawings in which like references denote similar elements, and in which:

Figure 1 is a block diagram illustration of an example electronic appliance incorporating the teachings of the present invention;

Figure 2 is a flow chart illustrating an example method for altering the personality of an electronic appliance based, at least in part, on the location of the appliance, in accordance with one embodiment of the present invention;

Figure 3 is a graphical illustration of an example personality database, in accordance with one embodiment of the present invention;

Figure 4 is a graphical illustration of an example characteristics database, in accordance with one embodiment of the present invention;

Figures 5 and **6** each provide a graphical illustration of example user interfaces for alternate device personalities provisioned by an electronic appliance incorporating the teachings of the present invention, in accordance with one embodiment of the present invention;

Figure 7 is a block diagram of an example electronic appliance incorporating the teachings of the present invention, in accordance with an alternate embodiment of the present invention; and

Figure 8 is a block diagram of an example software architecture for an electronic appliance incorporating the teachings of the present invention, in accordance with one embodiment of the present invention.

DETAILED DESCRIPTION

In the following description, for purposes of explanation, specific numbers, materials and configurations are set forth in order to provide a thorough understanding of the present invention. However, it will be apparent to one skilled in the art that the present invention may be practiced without the specific details. In other instances, well known features are omitted or simplified in order not to obscure the present invention. Furthermore, for ease of understanding, certain method steps are delineated as separate blocks, however, those skilled in the art will appreciate that such separately delineated blocks should not be construed as necessarily conferring an order dependency in their performance.

Reference in the specification to "one embodiment" or "an embodiment" means that a particular feature, structure or characteristic described in connection with the embodiment is included in at least one embodiment of the present invention. Thus, the appearances of the phrase "in one embodiment" appearing in various places throughout the specification are not necessarily all referring to the same embodiment.

Referring now to **Figure 1**, a block diagram of an example embodiment of an electronic appliance which, in accordance with the teachings of the present invention, adjusts the appliance personality (e.g., user interface and application set) and, therefore, the perceived functionality of the electronic appliance based, at least in part, on an identified current location and/or location type of the electronic appliance appliance. In accordance with the example embodiment of **Figure 1**, electronic appliance **100** beneficially includes receiver **104** which receives, downconverts and demodulates signals from any of a number of alternate sources (i.e., signal providers), to extract

information from which controller **102** calculates a current location/location type of electronic appliance **100**. Based, at least in part, on the identified location/location type of electronic appliance **100**, controller **102** (re)configures the user interface and the application set provisioned on the electronic appliance **100** with an appropriate one of a plurality of available appliance "personalities". As used herein, an application set refers to the set of functions/applications available on a typical dedicated electronic device, e.g., a PDA, a cellular telephone, a pager, a personal/portable/notebook computer, and the like. Thus, in accordance with the teachings of the present invention, to be developed more fully below, electronic appliance **100** modifies its appliance personality, and therefore to its perceived functionality, to any of a number of available personalities based, at least in part, on the current location/location type of the electronic appliance. Accordingly, unlike the common prior art electronic devices with a single, dedicated personality, an electronic appliance incorporating the teachings of the present invention has a plurality of such personalities and automatically alters its personality based, at least in part, on the determined location of the electronic appliance.

In one embodiment, for example, electronic appliance **100** incorporating the teachings of the present invention may well take on the personality (e.g., user interface and application set) of a personal digital assistant (PDA) in a first location (e.g., the office), and the personality of a GPS when the appliance is moved to a second location (e.g., a national forest), or while the appliance is mobile. Those skilled in the art will appreciate, from the description to follow, that an electronic appliance incorporating the teachings of the present invention represents a new paradigm in consumer electronics, wherein the electronic appliance tailors its perceived functionality to

accommodate the many needs of a typical consumer heretofore requiring a plurality of dedicated electronic appliances.

In addition to those elements enumerated above, electronic appliance **100** is shown comprising user input/output (I/O) interface **106**, memory/storage device **108**, video interface device **110** and audio interface device **112**, coupled together as depicted. As will be described in greater detail below, receiver **104** continuously receives signals from any of a number of alternate sources, e.g., signal providers, providing a signal from which controller **102** calculates the current location information of appliance **100**. In one embodiment, for example, receiver **104** is a global positioning system (GPS) receiver, which receives and downconverts signals from any of a number of alternative GPS satellites in orbit around the earth into a form that is recognizable by controller **102**. In another embodiment, receiver **104** is a LOng Range Navigation (LORAN) receiver, which receives and downconverts signals from terrestrial LORAN transmitters at known locations. In yet another embodiment, receiver **104** is an Infra Red (IR) receiver, which receives and downconverts signals from an IR transmitter. In each of these embodiments, the received signals contain, among other things, information regarding the location of the transmitter and the time the signal was sent. Based, at least in part, on the information contained in, or associated with the received signal, controller **102** calculates the relative location of appliance **100**. In one embodiment, receiver **104** receives such signals from a communicatively coupled antenna (not shown). In one embodiment, the antenna is incorporated into the housing of electronic appliance **100**. In one embodiment, the antenna is a photovoltaic cell to receive IR signals.

In addition to receiving location information as described above, receiver **104** also receives communication signals, in certain embodiments. In one embodiment, for example, receiver **104** also receives select ones of cellular telephony, personal communications system (PCS), pager signals, television signals, high-definition television signals, satellite communication signals, and the like. In one embodiment, electronic appliance **100** also comprises a communications transmitter (not shown) enabling electronic appliance **100** to assume the personality of, for example, a wireless telephone adhering to any of a number of alternative wireless telephony and personal communication system standards. In one embodiment, receiver **104** is intended to represent a hybrid combination of two or more types of receivers, thereby providing multiple function capability. Those skilled in the art will appreciate that the general operation of each of such receivers is well known and, thus, they need not be further discussed here.

As indicated above, receiver **104** provides the received and downconverted signal to controller **102** which, as will be described more fully below, utilizes the received information to determine the location of the appliance. In one embodiment, for example, controller **102** determines the relative location of the appliance in relation to the transmitter(s) from which the signals were received. In an alternate embodiment, controller **102** determines the exact geographical location of the appliance, from which a user interface is determined and an appropriate personality is identified. As used herein, controller **102** may well be any of a number of alternate devices known in the art such as, but not limited to a processor, an application

specific integrated circuit (ASIC), a programmable logic device (PLD), a programmable logic array (PLA), a special purpose controller, a microprocessor, a microcontroller, and the like.

In addition to determining the location of the electronic appliance, controller **102** controls the provision of user input device **106**, video interface device **110** and audio interface device **112**. More specifically, controller **102** controls the provision and perceived functionality of a user interface as presented to the user via user input device **106**, video interface device **110** and audio interface device **112**. In one embodiment, for example, user interface **106** interfaces with a keyboard (not shown) through which a user enters commands and/or data to electronic appliance **100**. In an alternate embodiment, video interface device **110** has "touch screen" capability, and user interface **106** interfaces with video interface device **110** to recognize and receive user input via the touch screen. In yet another embodiment, appliance **100** responds to voice commands from an embedded microphone (not shown). Thus, those skilled in the art will appreciate that any of a number of I/O devices may be used to provide an acceptable user interface that complements the selected personality of electronic appliance **100**.

As used herein, video interface device **110** and audio interface device **112** are intended to represent any of a number of alternative video interface devices and audio interface devices known in the art. In one embodiment, for example, video interface device **110** utilizes liquid crystal display (LCD) technology to display information to a user of the appliance. In an alternate embodiment, video interface device **110** utilizes plasma display technology to display information to a user. In one embodiment, audio interface device **112** utilizes stereo speaker technology in cooperation with a microphone to enable an audio user interface.

Memory/storage device **108** is similarly intended to represent any of a number of memory/storage devices known in the art. In one embodiment, for example, memory/storage device **108** is a mass storage hard drive. In an alternate embodiment, memory/storage device **108** is a re-writable optical drive. Accordingly, those skilled in the art will appreciate that such elements may well take many forms without deviating from the spirit and scope of the present invention and, thus, need not be further described herein.

Having introduced the architectural elements of an example electronic appliance **100** incorporating the teachings of the present invention with reference to **Figure 1**, an example method of operation of electronic appliance **100** will be developed more fully with reference to the flow chart of **Figure 2**. More specifically, **Figure 2** illustrates a flow chart of an example method for altering the personality of an electronic appliance based, at least in part, on the location/location type of the appliance, in accordance with one embodiment of the present invention. For ease of explanation, and not limitation, the method of **Figure 2** will be developed with continued reference to the electronic appliance of **Figure 1**.

Turning to **Figure 2**, an example method for altering the personality of an electronic appliance is presented, in accordance with one embodiment of the present invention. In accordance with the illustrated example embodiment of **Figure 2**, the method begins at block **202**, wherein appliance **100** receives one or more signals containing information from which a location and/or location type of the appliance can be determined. In one embodiment, for example, the signal(s) is(are) detected by an antenna (not shown) and passed to receiver **104**, wherein the received signals are filtered, downconverted and demodulated to extract the

information from the received signal, as described above. More specifically, in accordance with one embodiment of the present invention, receiver **104** processes the received signal to extract time and location information embedded within the signal denoting when the signal was transmitted. In one embodiment, the location information is a transmitter identifier.

The information obtained from the received signal, along with a timestamp of when the signal was received, is provided to controller **102** which determines the location or location type of appliance **100** based, at least in part, on the information contained in the received signals, block **204**. In one embodiment, for example, controller **102** calculates the difference between when the signal was first transmitted and when it was received to determine how far away appliance **100** is from the identified signal source. In one embodiment, controller **102** relies on informational signals received from two or more sources to accurately determine the position of appliance **100**, while in an alternate embodiment, a single detailed informational signal may suffice. In one embodiment, for example, controller **102** accesses a location database resident within memory/storage device **108** to identify a particular location based, at least in part, on the relative location calculated from the received signals. In an alternate embodiment, controller **102** accesses a location database within memory/storage device **108** to identify a location type (e.g., hotel, forested region, ballpark, etc) from information embedded within the received signal(s). An example of just such a location database is provide with reference to **Figure 3**.

Turning briefly to **Figure 3**, a graphical illustration of an example location database is presented, in accordance with one embodiment of the present invention. In accordance with the illustrated example embodiment of **Figure 3**, location database **300** is shown comprising a

location type field **302**, time delay field **304**, signal identification (ID) field **306**, latitude field **308**, longitude field **310**, elevation field **312**, infra-red (IR) identifier **314**, rate of change field **316**, and the default personality field **318**. As shown, location database **300** is a two-dimensional database correlating location information along the x-axis with location identifiers of particular locations or operating environments along the y-axis. Those skilled in the art will appreciate, however, that location database **300** is but an example and that databases of greater or lesser complexity could well be substituted for location database **300**. For example, a three dimensional database may well be used wherein the z-axis is comprised of interface characteristics associated with each of the default personalities listed in default personality field **318**.

With continued reference to **Figure 3**, location database **300** denotes particular location types and/or operating environments along the y-axis, e.g., home **320**, office **322**, mobile **324** and airplane **326**, to name a few. Along the x-axis in columns **304-316** are stored location information correlated to the particular location type and/or operating environment. For example, if appliance **100** receives a LORAN signal from a transmitter with signal ID 3128, experiencing a time delay of 3ms, that is but one indication that the appliance is located within the "home" of the user of the device. Further information from, say, an IR transmitter (IR identifier field **314**), or a global positioning system (GPS) (e.g., with reference to fields **308-312**) enables appliance **100** to further define the location within the home to the kitchen or study, for example. The office location is defined with signals from multiple LORAN transmitters (e.g.,

fields **304** and **306**, as well as a global positioning system (GPS) which provides elevation information as well, e.g., as denoted in elevation field **312**.

In accordance with the teachings of the present invention, field **318** denotes a default appliance personality associated with each of the location ID's located in column **302**. In one embodiment, a first alternate appliance personality may be denoted in parenthesis (). In one embodiment, the default personality denoted in column **318** associated with a particular location ID **302** is defined by the user of the appliance with a set-up application. In an alternate embodiment, appliance **100** includes instructions enabling appliance **100** to determine the general operating environment and automatically select a default appliance personality suitable to the identified operating environment. Those skilled in the art will appreciate that the default personality is merely a starting point, the user of appliance **100** can change the dynamically selected personality by selecting an alternate personality. In one embodiment, the user of appliance **100** can alter the user interface and/or application set associated with a personality, thereby further customizing the perceived functionality of appliance **100**. In one embodiment, to be described more fully below, electronic appliance **100** depicts an icon associated with a pull-down table of personalities from which the user of appliance **100** may select a suitable appliance personality, adjust the user interface, and/or select/modify the provisioned application set.

In addition to the location database depicted in **Figure 3**, electronic appliance **100** may also access other, remote location databases such as, for example, the MapBlast™ web site. Those skilled in the art will appreciate that the MapBlast™ web site enables a user to enter an address, or other geographical coordinates, to identify a particular location. Accordingly,

appliance **100** can access such remote location databases to identify the location type/operating environment of the appliance in order to select an appropriate one of a plurality of alternative appliance personalities. Moreover, in one embodiment, when such remote databases are accessed, a select subset or all of the location information available in the remote database is automatically downloaded to the local location database, e.g., location database **300**, to reduce the need for further accesses to remote location databases in the future.

Returning to **Figure 2**, having determined a location or location type of electronic appliance **100** based, at least in part, on the information extracted from the received signals in block **204**, controller **102** identifies an appropriate appliance personality from a plurality of available personalities, block **206**. In one embodiment, controller **102** selects user interface characteristics and an application set offering the perceived functionality to provision one of a plurality of available appliance personalities. In one embodiment, for example, controller **102** accesses memory/storage device **108** which has stored therein an interface characteristics/application set database, which correlates a number of interface characteristics and application sets with location types/operating environments and/or appliance personalities. An example of just such an interface characteristics database is presented with reference to **Figure 4**.

Turning briefly to **Figure 4**, an interface characteristics database **400** incorporating the teachings of the present invention is presented, in accordance with one embodiment of the present invention. As shown, interface characteristics database **400** is depicted as a two-dimensional database, with a number of interface characteristics denoted along the y-axis, and a number of alternate location types/operating environments correlated along the x-axis. As with

the location database presented in **Figure 3**, those skilled in the art will appreciate that databases of greater or lesser complexity may well be substituted for interface characteristics database **400** without deviating from the spirit or scope of the present invention.

In accordance with the illustrated example embodiment, interface characteristics database **400** is shown comprising interface characteristics field **402**, a home environment type field **404**, a work environment type field **406**, an auto (or mobile) environment type field **408** and an airplane environment type field **410**. As shown, the interface characteristics field **402** may denote such interface features as the background color of the display **401**, whether particular icons are denoted on the screen, e.g., financial files icon **412**, office files icon **414**, and the like, whether the device takes on the personality of a day planner **416**, a radio **418**, a GPS **420**, or any of a plurality of alternative audio/video user interface characteristics and application sets associated with the available appliance personalities.

Returning to **Figure 2**, once controller **102** selects an appropriate appliance personality from the database **400** in block **206**, controller **102** provisions the selected personality on appliance **100**. In one embodiment, for example, appliance **100** may have a default personality of a personal digital assistant such that whenever the appliance is first turned on, or reset, the appliance boots into the PDA personality. However, as appliance **100** receives and processes reference signals, or if it is apparent that the user is not using the features of the PDA, appliance **100** automatically transitions to a personality that corresponds with the identified location of the appliance **100**, block **206**. Further, as long as appliance **100** continues to operate, the process of updating the appliance personality in accordance with its determined location also continues, as

shown. In this way, appliance **100** incorporating the teachings of the present invention automatically adjusts to meet the dynamic demands of ever mobile appliance users.

Having described example architectural elements and operation of the present invention with reference to the example embodiments depicted in **Figures 1** through **4**, **Figures 5** and **6** are presented to provide a couple of example appliance personalities selectively provisioned by innovative electronic appliance **100**, in accordance with the teachings of the present invention. Those skilled in the art will appreciate, from the description to follow, that the appliance personalities presented in **Figures 5** and **6** are intended to represent selected ones of a plurality of user interfaces/appliance personalities available on a single host electronic appliance, the selection based at least in part on the identified location of the host electronic appliance, as described above. Further, those skilled in the art should appreciate that the following examples are merely illustrative of the types of personalities that may be offered by a host electronic appliance. Certainly, other personalities which are dynamically selected based, at least in part, on the identified location of the host electronic appliance are anticipated by the teachings of the present invention.

Turning to **Figure 5**, user interface **600** is presented depicting an appliance personality of a personal digital assistant, in accordance with one embodiment of the present invention. In accordance with the illustrated example embodiment of **Figure 5**, the visual portion of the user interface **600** is rendered on a video display device **601** displaying a number of icons associated with applications specially provisioned based, at least in part, on the location of the host electronic appliance incorporating the teachings of the present invention, e.g., electronic

appliance **100**. As shown, user interface **600** denoting visual interface for the PDA personality includes icons associated with a digital library **602**, financial files **606**, news sites **604**, telephone listings **608**, an electronic mail application **610**, recipes **612**, sports news/sites **614** and a trash can **616**. In addition to the foregoing, user interface **600** includes a pull-down menu icon **603** in the upper left had corner of display **601**. In accordance with one embodiment of the present invention, a user of the host electronic device can override the automatic selection of appliance personality, selecting an alternate personality from a display all available personalities by selecting icon **603**. Examples of each of the aforementioned applications/links abound and, as such need not be further described here. Those skilled in the art will appreciate that, in addition to the visual aspects of the user interface, certain electronic appliances may well provide audio aspects to the user interface which, by their nature, cannot be depicted in **Figure 5**.

Turning to **Figure 6**, display **601** of a host electronic device is presented depicting an alternative appliance personality of a cellular telephone. As shown, display **601** includes an functioning keypad display **702**, a microphone display icon **706** and a speaker display icon **704**. Those skilled in the art will appreciate that the microphone display icon **706** and the speaker display icon **704** are not a functioning speaker or microphone, but rather are displayed in the general area of where a speaker and microphone are embedded within the electronic appliance, thereby providing a user with the visual queues necessary to position the ear in proximity to the speaker, and the mouth in proximity to the microphone. In accordance with this embodiment of the present invention, display **601** is a touch sensitive screen, enabling a user to interact with the electronic appliance by "pushing" the appropriate "buttons" rendered on display **601**. Thus, in

accordance with the description above, a single electronic device incorporating the teachings of the present invention provisions the PDA personality depicted in **Figure 5** in one location, while provisioning the cellular telephone personality depicted in **Figure 6** at an alternative location, or as selected by a user from pull-down menu **603**.

Turning to **Figure 7**, a block diagram of an example electronic appliance **800** incorporating the teachings of the present invention is depicted, in accordance with an alternate embodiment of the present invention. In accordance with the illustrated example embodiment, electronic appliance **800** is depicted comprising one or more processors **802** with associated cache(s) **806** and host bridges **804** coupling processor(s) **802** to a high speed input/output (I/O) bus **810**. In addition, system memory **808**, video memory **812**, audio/video tuner **828**, network communications interface **830**, bus bridge **816** and user interface controller **832** incorporating the teachings of the present invention are also communicatively coupled to high speed I/O bus **810**, as depicted. In accordance with the teachings of the present invention, user interface controller **832** includes receiver **104** to receive, downconvert and demodulate, signals received from any of a number of transmitting sources to extract information from which user interface controller **832** determines the location of appliance **800**, and to control provision of the user interface characteristics and perceived functionality, in accordance with the teachings of the present invention.

As shown, bus bridge **816** couples high speed I/O bus **810** to another, typically I/O, bus **818**. In accordance with the illustrated example embodiment of **Figure 7**, electronic appliance **800** also includes mass storage device **820**, keyboard **822**, pointing device **824** and I/O ports **826**.

With continued reference to **Figure 7**, elements **802-830** perform their conventional functions as known in the art. In particular, mass storage device **820** is used to provide permanent storage for the data and programming instructions to implement the above described functions, whereas system memory **808** is used to provide temporary storage for the data and programming instructions when executed by processor(s) **802**. In one embodiment, for example, mass storage **820** stores the location and interface databases associated with the teachings of the present invention. I/O ports **826** are one or more serial and/or parallel communication ports used to provide communication between additional peripheral devices which may be coupled to electronic appliance **800**. Network communications interface communicatively couples electronic appliance **800** to other remote devices such as, for example, remote location databases in accordance with the teachings of the present invention. Thus, those skilled in the art will appreciate that, except for the teachings of the present invention, electronic appliance **800** is intended to represent any of a number of alternative well known electronic appliances, including but not limited to general purpose computer systems based on the Pentium® processor, the Pentium® Pro processor, or the Pentium® II processor commonly available from Intel Corporation of Santa Clara, California.

Further, it is to be appreciated that various components of electronic appliance **800** may well be re-arranged, integrated, or practiced with greater or lesser functional blocks without deviating from the spirit and scope of the present invention. For example, the peripheral devices shown coupled to standard I/O bus **818** may, in alternate embodiments, be coupled to high

performance I/O bus **810**; in addition, in some implementations only a single bus may exist with the components of electronic appliance **800** being coupled to the single bus.

In accordance with one aspect of the present invention, the innovative features of the present invention are utilized by software routines run by electronic appliance **800** of **Figure 7**. These software routines run a plurality or series of instructions to be executed by a processor, such as processor(s) **802** and user interface controller **832** in electronic appliance **800**. Initially, the series of instructions are stored on a storage device, such as mass storage device **820**. It is to be appreciated that the series of instruction may be stored on any conventional storage device, such as a diskette, CD ROM, magnetic tape, DVD, laser disk, ROM, flash memory, etc. It is also to be appreciated that the series of instruction need not be stored locally, and could be received from a remote storage device, such as a server on a network, via I/O ports **826**. The instructions are copied from the storage device, such as mass storage device **820**, into system memory **814** and then accessed and executed by processor(s) **802**. In alternate embodiments, the functional routines used to implement the teachings of the present invention are implemented in discrete hardware or firmware. For example, an application specific integrated circuit (ASIC) could be programmed with the above described functions of the present invention.

Turning to **Figure 8**, a block diagram of an example software architecture implemented on an electronic appliance incorporating the teachings of the present invention is presented, in accordance with one embodiment of the present invention. In accordance with the illustrated example embodiment of **Figure 8**, software architecture **900** is shown comprising a plurality of applications **910**, operating system and device drivers **912** (depicted as one functional block for

ease of explanation), and user interface manager **902** incorporating the teachings of the present invention, cooperatively coupled as depicted. Those skilled in the art will appreciate, from the description to follow, that user interface manager **902** includes services for controlling the provision of the user interface and perceived functionality of a host electronic appliance based, at least in part, on received reference signals **903** in accordance with the teachings of the present invention.

In accordance with the illustrated example embodiment of **Figure 8**, user interface manager **902** is shown comprising application manager services **904**, interface selection services **906** and location identification services **908**. As used herein, location identification services **908** determines the location of a host electronic appliance, e.g., electronic appliance **100** or **800**, based at least in part on reference signals **903** received from external sources, as described above. In one embodiment, location identification services **908** are a plurality of executable instructions which, when executed by an appropriate processor/controller, implement the method of **Figure 2** to determine the location of the host electronic appliance. In accordance with one embodiment of the present invention, location identification services **908** accesses location database via the operating system/device drivers **912** to identify a location type/operating environment stored therein which corresponds to the information extracted from the received reference signals **903**. As described above, however, location identification services may well access remote sources of location identification information via the networking/communication services of operating system/device drivers **912**.

Interface selection services **906** control the provision of the user interface of a host electronic appliance based, at least in part, on the location of the appliance as determined by location identification services **908**. In accordance with the illustrated example embodiment, interface selection services **906** accesses the interface characteristics database **914** to select appropriate interface characteristics based, at least in part, on the determined location of the host electronic appliance. In one embodiment, for example, interface selection services **906** control the personality of a host electronic appliance through provision of the user interface represented by select ones of applications **910** and operating system/device drivers **912**, as described above.

With continued reference to **Figure 8**, application manager services **904** control the provision of and user interface for applications(s) **910** based, at least in part, on the location of the host electronic appliance as determined by location identification services **908**. In one embodiment, for example, the personality of the host electronic device is determined by the user interface selected by interface selection services **906** and the selective provision of one or more applications **910** by application manager services **904** based on the determined location of the host electronic appliance.

As depicted herein, applications **910** are intended to represent any of a number of specialty applications known in the art which are executable by electronic appliances. Similarly, operating system/device drivers **912** is also intended to represent any of a number of alternative general operating systems and device drivers known in the art. Those skilled in the art will appreciate that the execution of operating system **912** is initiated from within a basic input/output system (BIOS) (not shown). Operating system **912** is a general software service which provides

an interface between user interface manager **902**, application(s) **910** and hardware elements of the host electronic appliance such as, for example, location database **916** and interface characteristics database **914**, as depicted. Operating system **912** also provides an interface, such as a graphical user interface (GUI), between the user and the host electronic appliance. According to one embodiment of the present invention, operating system **912** is the Windows™ 95 operating system, available from Microsoft Corporation of Redmond, Washington. However, it is to be appreciated that the present invention may be used with any other conventional operating system, such as other versions of Microsoft Windows™ (for example, Windows™ 3.0, Windows™ 3.1, Windows™ NT, or Windows™ CE), Microsoft DOS, OS/2, available from International Business Machines Corporation of Armonk, New York, the Apple Macintosh Operating System, available from Apple Computer Incorporated of Cupertino, California, the NeXTSTEP® operating system available from Apple Computer Incorporated, the UNIX operating system, available from Santa Cruz Operations of Santa Cruz, California, the Be operating system from Be, Inc. of Menlo Park, California, and the LINUX operating system.

Those skilled in the art will appreciate, based on the foregoing, that an electronic appliance incorporating the teachings of the present invention is also revolutionary in the ability to accommodate any of a number of mental and/or physical challenges encountered by members of our communities. That is, an electronic appliance incorporating the teachings of the present invention provides the inherent ability to tailor the user interface and device personality to present an audio user interface instead of a visual one to accommodate the visually impaired, or a visual interface in lieu of an audio interface to accommodate the hearing impaired. In alternate

embodiments, an electronic appliance incorporating the teachings of the present invention can provide a french-english dictionary to a student in french class, while automatically assuming the personality of a scientific calculator in a math class if such class rooms are equipped with a transmitter providing information regarding the location and course. Thus, those skilled in the art will appreciate that numerous alternate embodiments and implementations of the present invention can be achieved without deviating from the spirit and scope of the present invention.

Thus, alternative embodiments for a method and apparatus facilitating the management of networked devices have been disclosed. While the method and apparatus of the present invention has been described in terms of the above illustrated embodiments, those skilled in the art will recognize that the invention is not limited to the embodiments described. Thus, those skilled in the art will appreciate that the present invention can be practiced with modification and alteration within the spirit and scope of the appended claims. Accordingly, the descriptions thereof are to be regarded as illustrative instead of restrictive on the present invention.

CLAIMS

What is claimed is:

1. An electronic appliance implemented method comprising:

(a) ascertaining a current location/location type of the electronic appliance;

(b) identifying an appliance personality from a plurality of available personalities based, at least in part, on the ascertained current location/location type of the electronic appliance; and

(c) provisioning the identified appliance personality on the electronic appliance.

2. The method of claim 1, wherein provisioning the appliance personality comprises:

selecting and providing a user interface and an application set from a plurality of available user interfaces and application sets to reflect the identified appliance personality.

3. The method of claim 1, wherein ascertaining the position of the electronic appliance comprises:

(a.1) receiving one or more signals containing information from a corresponding one or more sources;

(a.2) extracting information embedded within the received one or more signals; and

(a.3) determining the current location/location type of the electronic appliance from the information associated with the received one or more signals.

4. The method of claim 3, wherein the one or more sources are satellites designed to provide a global positioning system (GPS) signal.

5. The method of claim 3, wherein one or more sources are cellular communication transmitters designed to provide a plurality of control signals containing information regarding a location of the transmitters and a timestamp of when the received signal(s) were transmitted.

6. The method of claim 3, wherein the current location/location type of the electronic appliance is calculated using a triangulation technique.

7. The method of claim 3, wherein the current location/location type of the electronic appliance is determined by cross referencing a calculated relative position against a database of locations.

8. The method of claim 1, wherein the plurality of appliance personalities are pre-programmed in the appliance and reside in an interface database.

9. The method of claim 1, wherein the plurality of appliance personalities are stored in one or more memory cards which are removably coupled to the electronic appliance.

10. An electronic appliance comprising:

a receiver, coupled to an antenna, to receive signals including information;

a processor, coupled to the receiver, to determine a location of the electronic appliance from the received signals; and

a storage medium having stored therein a plurality of processor executable instructions for selectively implementing a plurality of appliance personalities for the electronic appliance, wherein an appropriate appliance personality from the plurality of appliance personality is selected and provisioned by the processor based, at least in part, on the determined location of the electronic appliance.

11. The electronic appliance of claim 10, wherein the storage medium is removably coupled to the electronic appliance.

12. The electronic appliance of claim 10, wherein the storage medium has stored therein a plurality of instructions for a plurality of user interfaces and application sets which are selectively executed by the processor to provision appliance personalities.

13. The electronic appliance of claim 10, wherein the antenna is a global positioning system (GPS) antenna.

14. The electronic appliance of claim 10, wherein the antenna is a radio frequency (RF) antenna.

15. The electronic appliance of claim 10, wherein the antenna is a photovoltaic cell operative to receive infrared (IR) signals.

16. The electronic appliance of claim 10, wherein the plurality of appliance personalities includes a personality unique to a home environment.

17. The electronic appliance of claim 10, wherein the plurality of appliance personalities includes a personality unique to an office operating environment.

18. The electronic appliance of claim 10, wherein the plurality of appliance personalities includes a personality tailored for a mobile operating environment.

19. A storage medium having stored therein a plurality of executable instructions which, when executed, implement an appliance personality provisioning system having a number of functions, including a location identification function which determines a current location of a host appliance, a personality selection function which selects an appliance personality from a plurality of appliance personalities available to the host appliance based, at least in part, on the identified current location of the host appliance, and a function to provision a selected personality on the host appliance.

20. The storage medium of claim 19, wherein the plurality of executable instructions further include instructions to implement a plurality of user interfaces and a plurality of application sets corresponding to the plurality of available appliance personalities.

ABSTRACT

A method for providing an appliance personality is presented comprising ascertaining a current location/location type for the electronic appliance, selecting a suitable electronic appliance personality based, at least in part, on the ascertained location/location type of the electronic appliance and provisioning the selected appliance personality on the electronic appliance.

Express Mail Label No. EL034430812US

FIG. 1

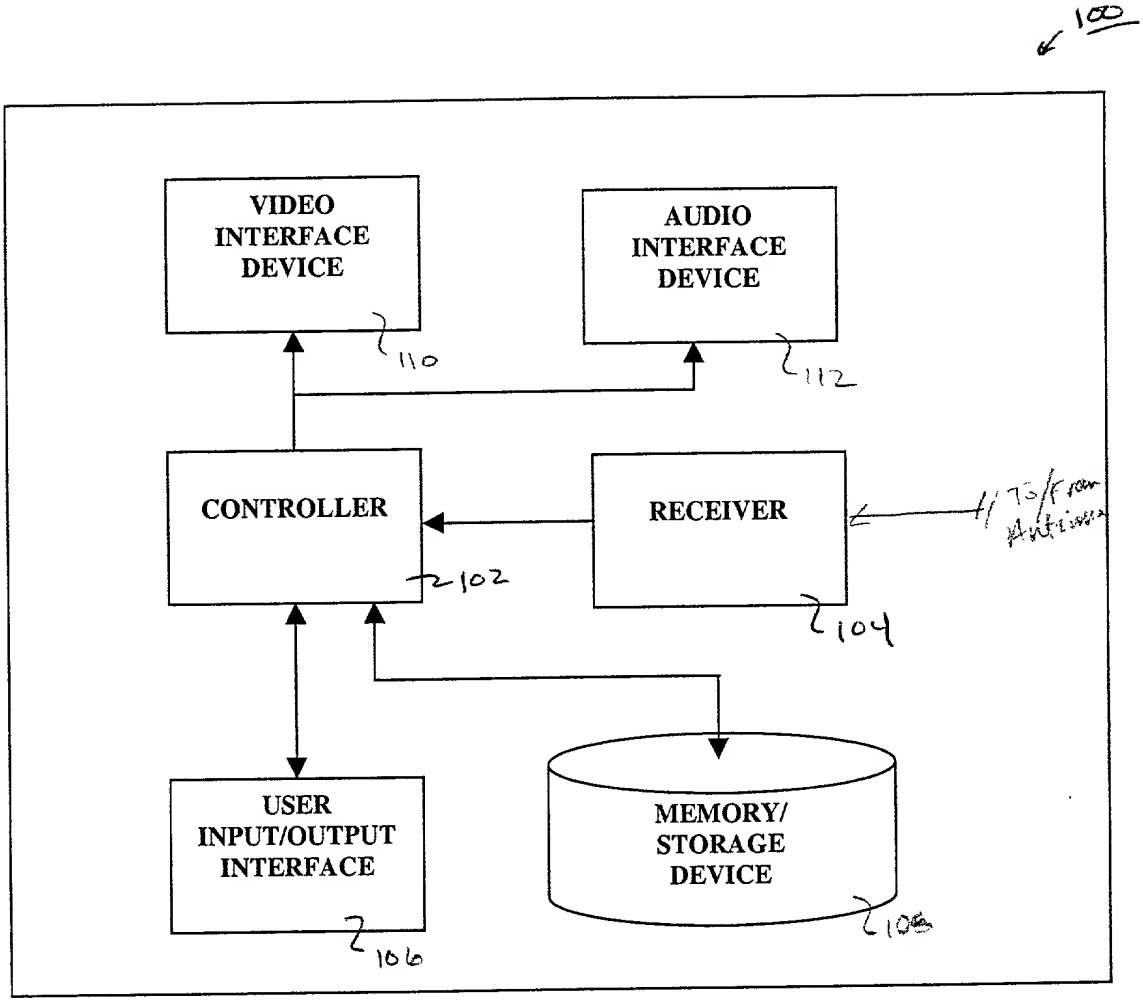

100
VIDEO INTERFACE DEVICE
110
AUDIO INTERFACE DEVICE
112
CONTROLLER
102
RECEIVER
104
USER INPUT/OUTPUT INTERFACE
106
MEMORY/ STORAGE DEVICE
108

FIG. 2

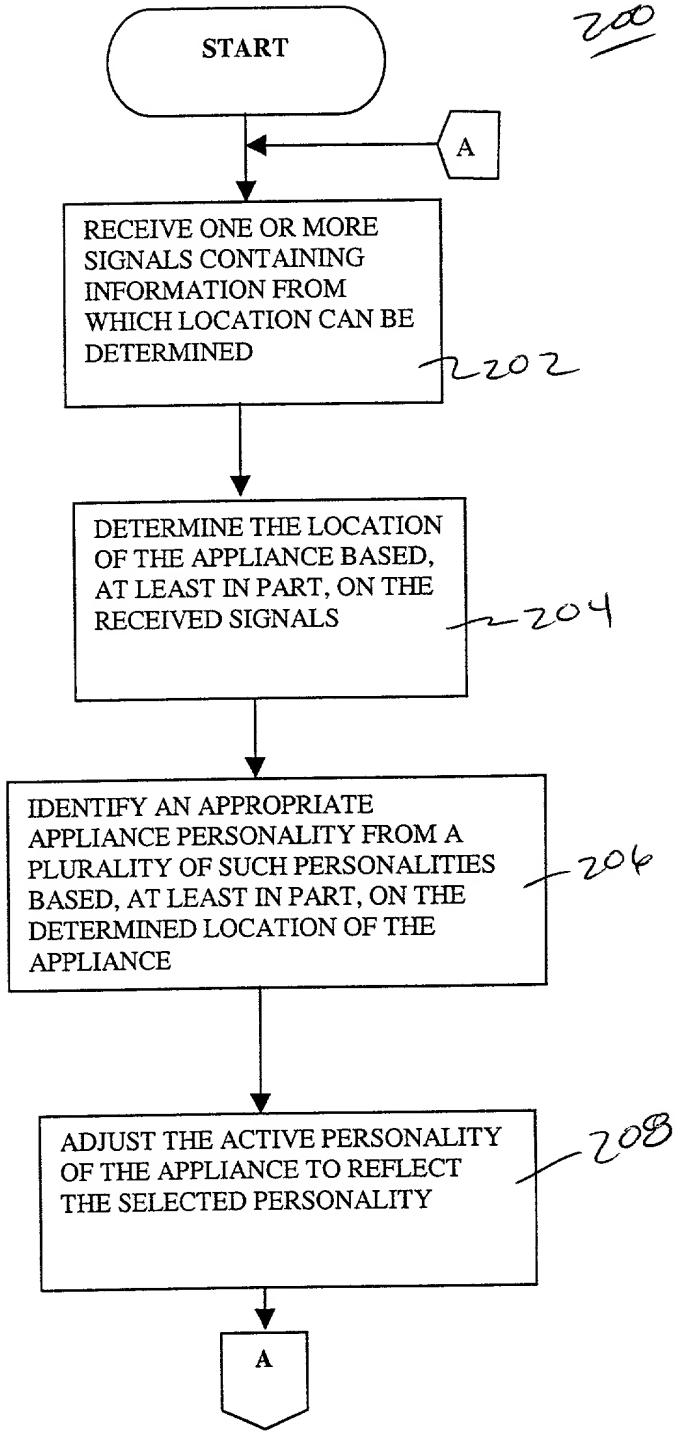

200
START
A
RECEIVE ONE OR MORE SIGNALS CONTAINING INFORMATION FROM WHICH LOCATION CAN BE DETERMINED
202
DETERMINE THE LOCATION OF THE APPLIANCE BASED, AT LEAST IN PART, ON THE RECEIVED SIGNALS
204
IDENTIFY AN APPROPRIATE APPLIANCE PERSONALITY FROM A PLURALITY OF SUCH PERSONALITIES BASED, AT LEAST IN PART, ON THE DETERMINED LOCATION OF THE APPLIANCE
206
ADJUST THE ACTIVE PERSONALITY OF THE APPLIANCE TO REFLECT THE SELECTED PERSONALITY
208
A

FIG. 3

300

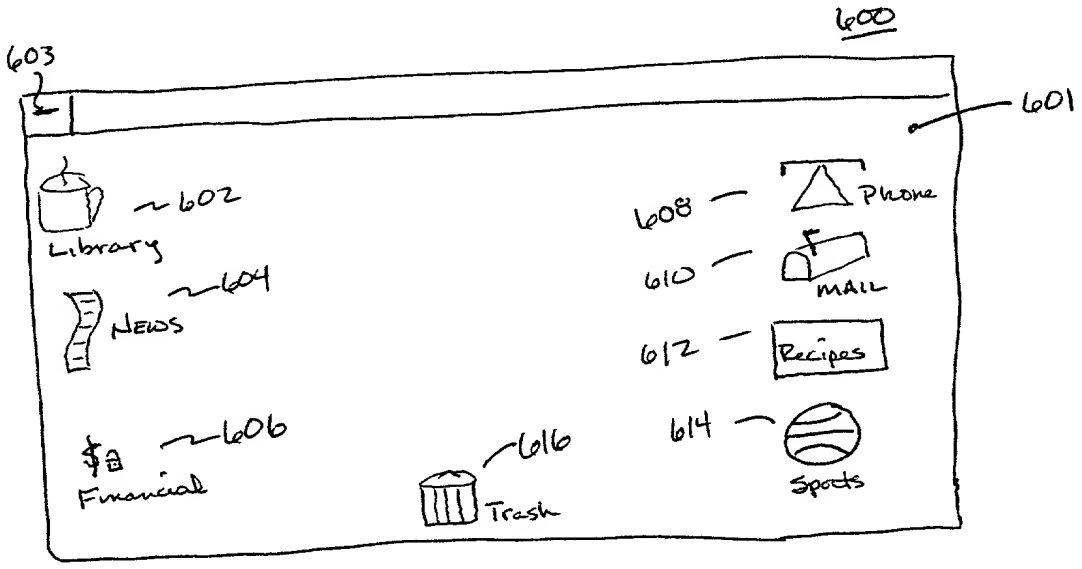
	302 LOCATION TYPE	304 TIME DELAY	306 SIGNAL ID	308 LATITUDE	310 LONGITUDE	312 ELEVATION	314 IR IDENTIFIER	316 RATE OF CHANGE	318 DEFAULT PERSONALITY
320	Home	3ms	3128				Kitchen Study	~	eRecipe Box Internet Financial Tab
322	Office	2ms 35ms	2753 2770	126°8"	39° 0"	390'	Office Conf. Room	~	Personal Computer PDA
324	Mobile	~	~	~	~	<15k'		<100mph	GPS (PDA)
326	Airplane	~	~	~	~	>1500'		>115 mph	PDA

FIG. 4

400

Interface Name	Home		Work		Auto	Airplane	...
	Kitchen	Study	Office	Conf. Room			
BackGround Color	Yellow	Blue	White	White	White	White	
Library	Personal	Personal	Ref.	Ref.	Personal	Reference	
News	Local	Local	Bus.	Bus.	—	Business	
412 Financial Files	—	Locked	—	—	—	Locked	
Recipe Box	YES	—	—	—	—	—	
Font_Character							
Font_size	18pt	12pt	12pt	12pt	14pt	12pt	
Electronic Mail		YES	YES	—	—	—	
Facsimile		YES	YES	YES	—	—	
Sports		YES	—	—	—	YES	
414 Office Files	—	—	YES	Locked	—	—	
MARKET_Ticker	—	YES	YES	—	—	—	
Research_Library	—	YES	YES	—	YES	YES	
Design_Tools	—	YES	YES	YES	—	YES	
416 Day Planner	—	YES	YES	YES	—	YES	
418 RADIO	—	YES	—	—	YES	No	
420 GPS	—	No	—	—	YES	No	
:							
.							

FIG. 5


600
603
601
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Library
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NEWS
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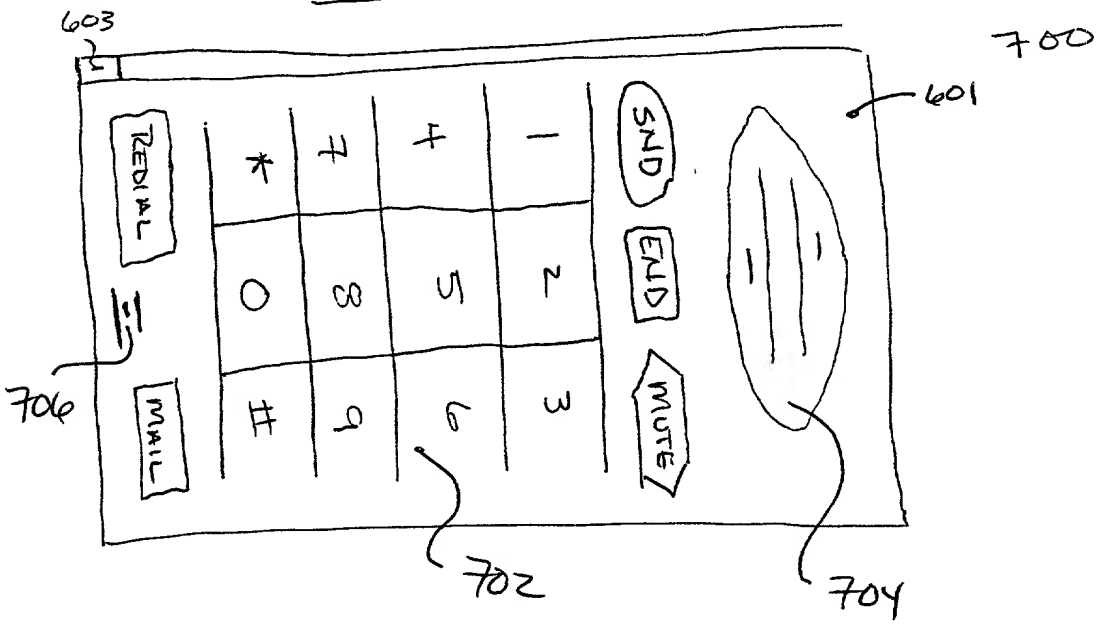
Financial
616
Trash
608
Phone
610
MAIL
612
Recipes
614
Sports

FIG. 6


603
700
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REDIAL
MAIL
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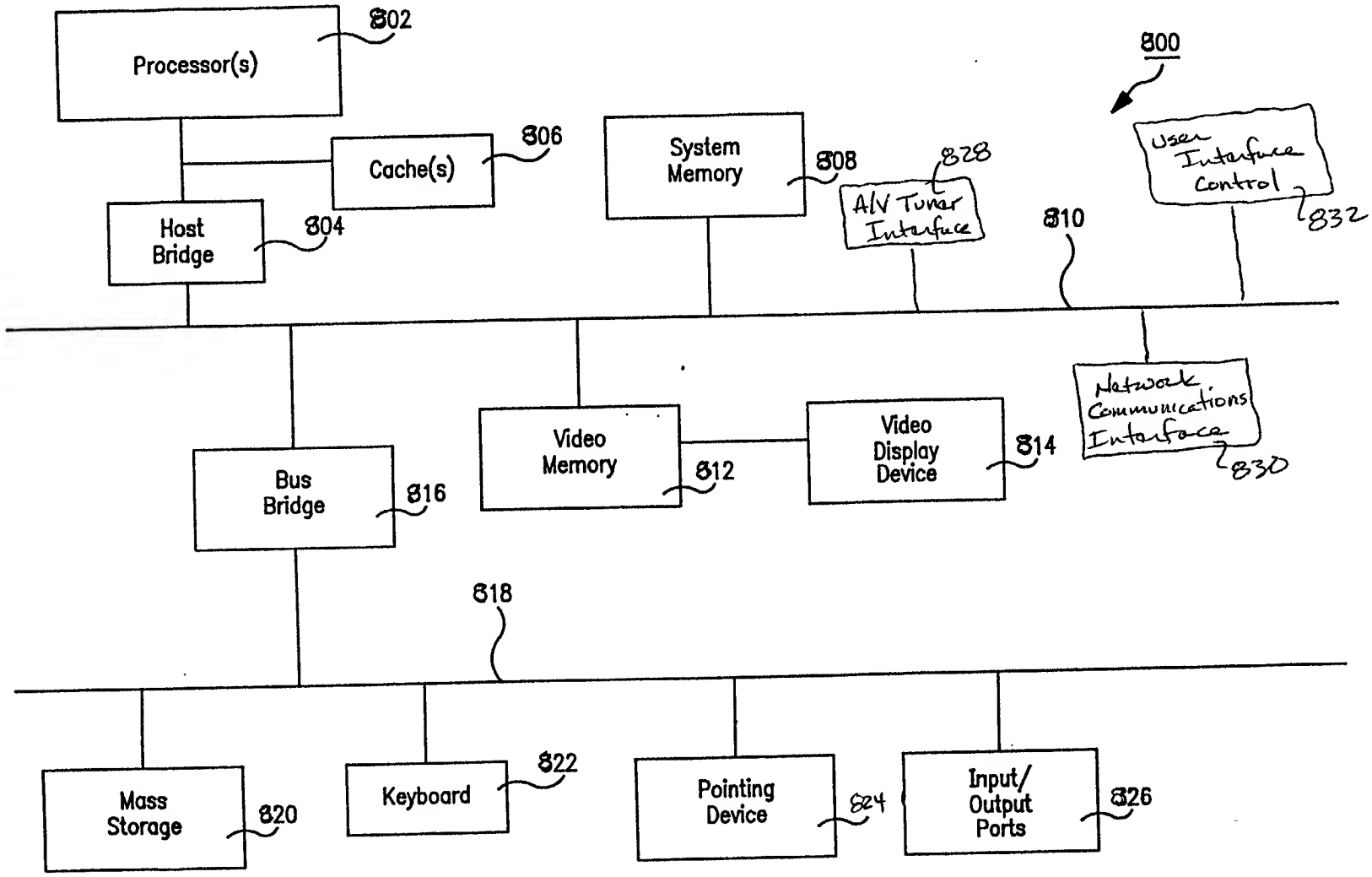
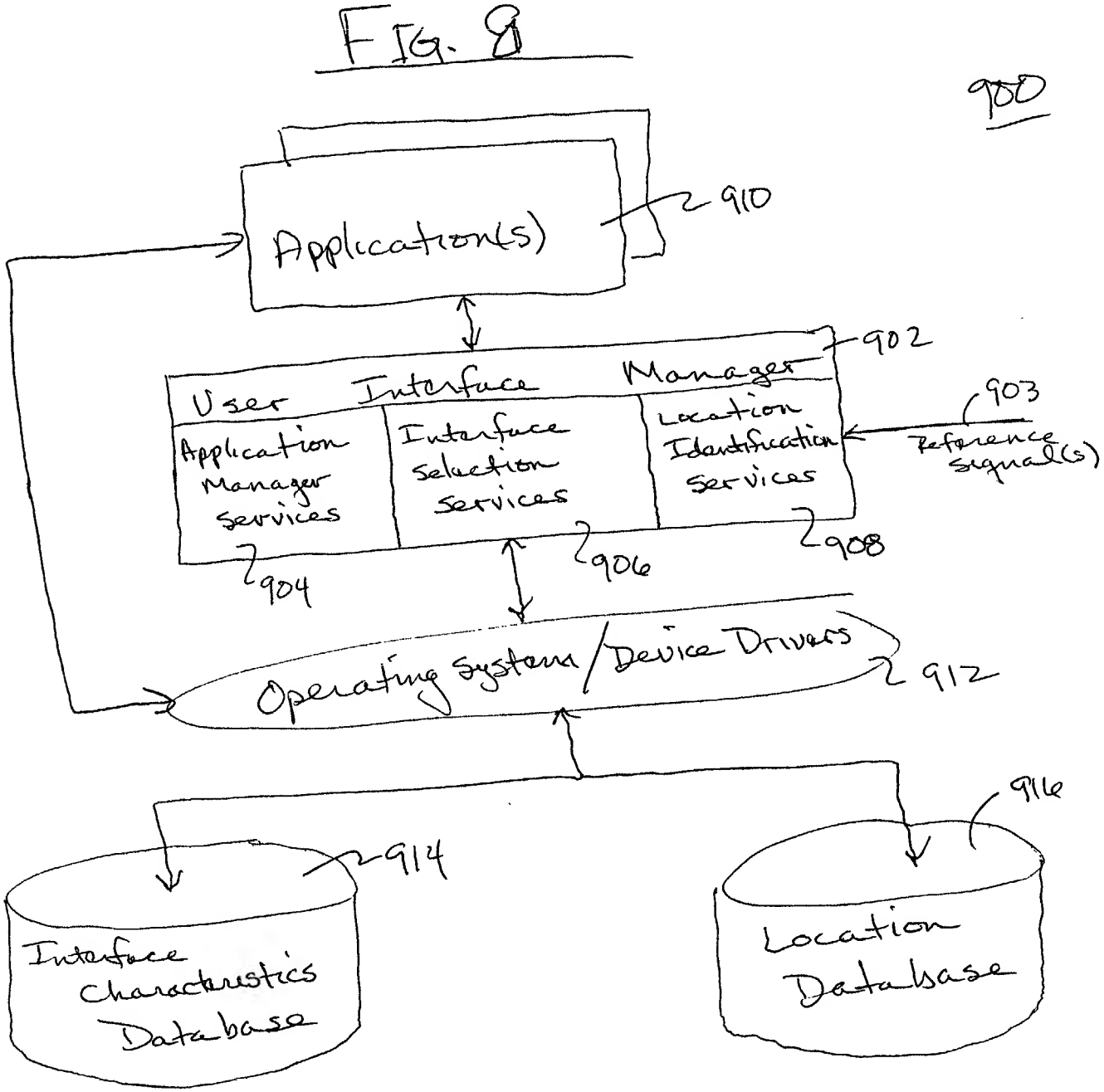

Processor(s)
802
800
Cache(s)
806
System Memory
808
828
A/V Tuner Interface
User Interface Control
832
Host Bridge
804
810
Network Communications Interface
830
Video Memory
812
Video Display Device
814
Bus Bridge
816
818
Mass Storage
820
Keyboard
822
Pointing Device
824
Input/ Output Ports
826

FIG. 7

FIG. 8


900
Application(s)
910
User Interface Manager
902
Application Manager Services
Interface Selection Services
Location Identification Services
903
Reference signal(s)
904
906
908
Operating System / Device Drivers
912
914
916
Interface Characteristics Database
Location Database

Attorney's Docket No.: 42390.P4114 PATENT

DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION
(FOR **INTEL CORPORATION** PATENT APPLICATIONS)

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below, next to my name.

I believe I am the original, first, and sole inventor (if only one name is listed below) or an original, first, and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

METHOD AND APPARATUS FOR PROVIDING A LOCATION BASED APPLIANCE PERSONALITY

the specification of which

__X__ is attached hereto.
____ was filed on _____ as
United States Application Number _____
or PCT International Application Number_____
and was amended on _____.
(if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claim(s), as amended by any amendment referred to above. I do not know and do not believe that the claimed invention was ever known or used in the United States of America before my invention thereof, or patented or described in any printed publication in any country before my invention thereof or more than one year prior to this application, that the same was not in public use or on sale in the United States of America more than one year prior to this application, and that the invention has not been patented or made the subject of an inventor's certificate issued before the date of this application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns more than twelve months (for a utility patent application) or six months (for a design patent application) prior to this application.

I acknowledge the duty to disclose all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119(a)-(d), of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)			Priority Claimed	
(Number)	(Country)	(Day/Month/Year Filed)	Yes	No

I hereby claim the benefit under title 35, United States Code, Section 119(e) of any United States provisional application(s) listed below

(Application Number) Filing Date

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose all information known to me to be material to patentability as defined in Title 37, Code of Federal Regulations, Section 1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Number)	Filing Date	(Status -- patented, pending, abandoned)

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(Name of Attorney or Agent)
ZAFMAN LLP, 12400 Wilshire Boulevard, 7th Floor, Los Angeles, California 90025 and direct
telephone calls to Michael A. Proksch, (503) 684-6200.
(Name of Attorney or Agent)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Full Name of Sole/First Inventor: Vaughn S. Iverson

Inventor's Signature _____ Date 1/29/1999

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